QNO 2 (b)

Differences Among Compositing, Incineration and Pyrolysis in Solid waste management:

Introduction *

Solid waste management is a supervised handling of waste from its generation, collection upto its disposal. It can be carried in a number of ways such as compositing, incenaration and pyrolysis.

* Differences:

These processes of solid waste manage differ in their inputs, outputs, pros and cons.

Compositing is a biological decomposition of waste material. It is the best way of Solid waste managment as it converts organic wastes into composite that is further useable.

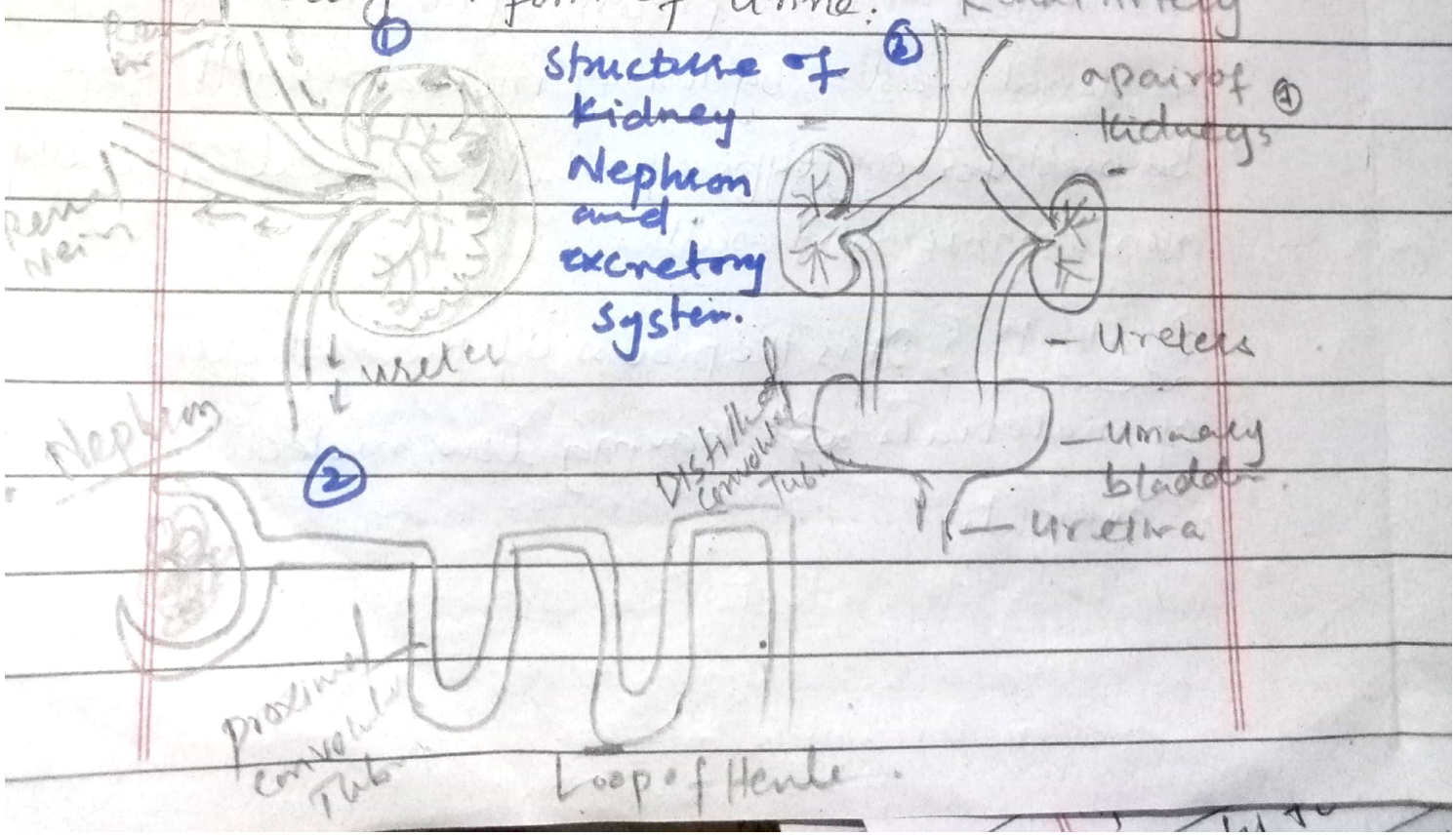
Incineration is the process of combustion of material waste by using incinators. It can be used for any type of solid material specially non organic solid waste.

Pyrolysis : It is the process of thermal decomposition of materials having low molecular weight.

Incineration	Pyrolysis	Composting
exothermic reaction	Endothermic reaction	Biological decomposition
Organic + Inorganic waste	All form of Organic waste.	organic waste Specially livestock manure.
output energy Toxic ash	Energy Brochar	Composite
High emission of CO_2 CH_4	Market of Brochar	Benefit for Agriculture

C. Role of Kidney in Urine formation.

Kidneys are the vital organs mainly responsible for the separation and removal of waste from the body in form of Urine.



process of Urine Formation.

Nephron is the structural and functional unit of kidney. There are millions of nephrons, responsible for filtration of blood and urine formation.

Blood enters kidney through Renal artery and distributed among millions of nephrons

There is a cup shaped Structure called Bowman's capsule surrounding glomerulus, a cluster of thin walled capillaries.

Nephron works in steps: (I) Filteration, (II) reabsorption (III) Secretion

I. **Filtration:** Blood containg waste products enter glomerulus, due to high pressure and thin walls blood is filtered here and the filterate enters into proximal part of Nephron.

II. **Reabsorption:** All the useful constituent of the filterate like glucose, salts, water are reabsorbed in proximal, loop of Henle and distal part of nephron by peritubular capillaries.

(III) **Secretion:** the inner layer of the nephron also secretes nitrogenous wastes into lumen of nephr

All the waste products from distal part enter into collecting ducts, then into Ureter and then store in Urinary bladder excreted outside through urethra.

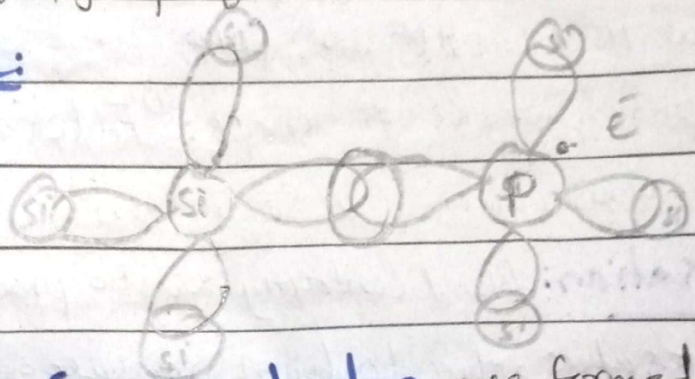
d. **N-Type and P-Type Semiconductors:**

Those materials which conduct electricity partially are called semiconductors. It can be of two types intrinsic and extrinsic semiconductor.

N-Type and P-Type are extrinsic semiconductors.

N-Type Semiconductors are formed when impurity is added to a pure semiconductor from fifth group of the Periodic table.

Example:



P-Type Semiconductors are formed when impurity is added to a pure semiconductor from third group of the Periodic Table.

Example:

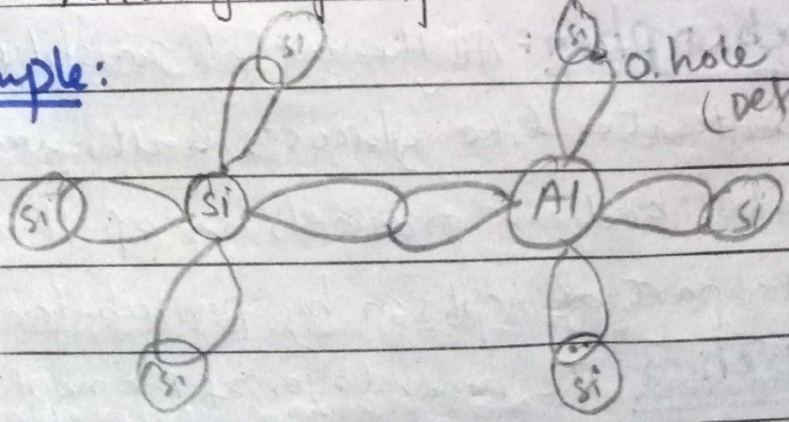


Table:

	N-Type	P-Type
①	Donor type	Acceptor type
②	Impurity atom is pentavalent	Atom is Trivalent
③	Electrons are the majority carriers	Holes are majority carriers.
④	Holes are minority carriers	electrons are minority carrier.

Semiconductors are the brain of modern Electronics

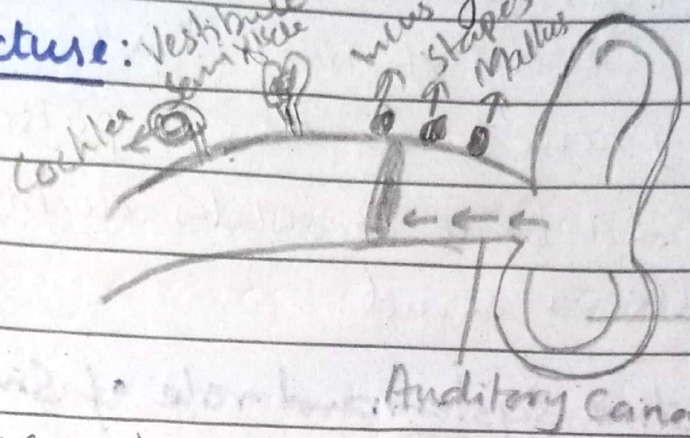
Some of the most important semiconductor devices includes diodes, transistors and thermistors. These semiconductor devices have changed the face of electronics today. Transistors have virtually replaced vaccum tubes and the values. Moreover, Semiconductors find wide applications because of their compactness, reliability and low cost. They handle a wide range of current and voltage. They have the ability to be integrated into complex but readily manufactured modules. IGBT modules Thermistors and diode modules are preffered in today's technologically advanced world.

Q No 5 (a)

Structure and Function of Human ear:

Human ear is one of the important sensory organs. It's function is hearing.

Structure:



Ear consists of three parts: (i) External / outer ear (ii) Middle Ear (iii) Inner Ear

1. External Ear comprises of Pinna, auditory Canal and eardrum. Sound waves interact with outear and directed towards middle ear.
2. Middle Ear consists of three small bones: (i) Malleus (ii) Incus (iii) stapes and Eustachain tube. Middle ear transmits sound waves to inner ear.
3. Inner Ear consists of (i) Cochlea (ii) Vestibule and (iii) Semi circular Cannals. Inner ear contains nerves and receptors.

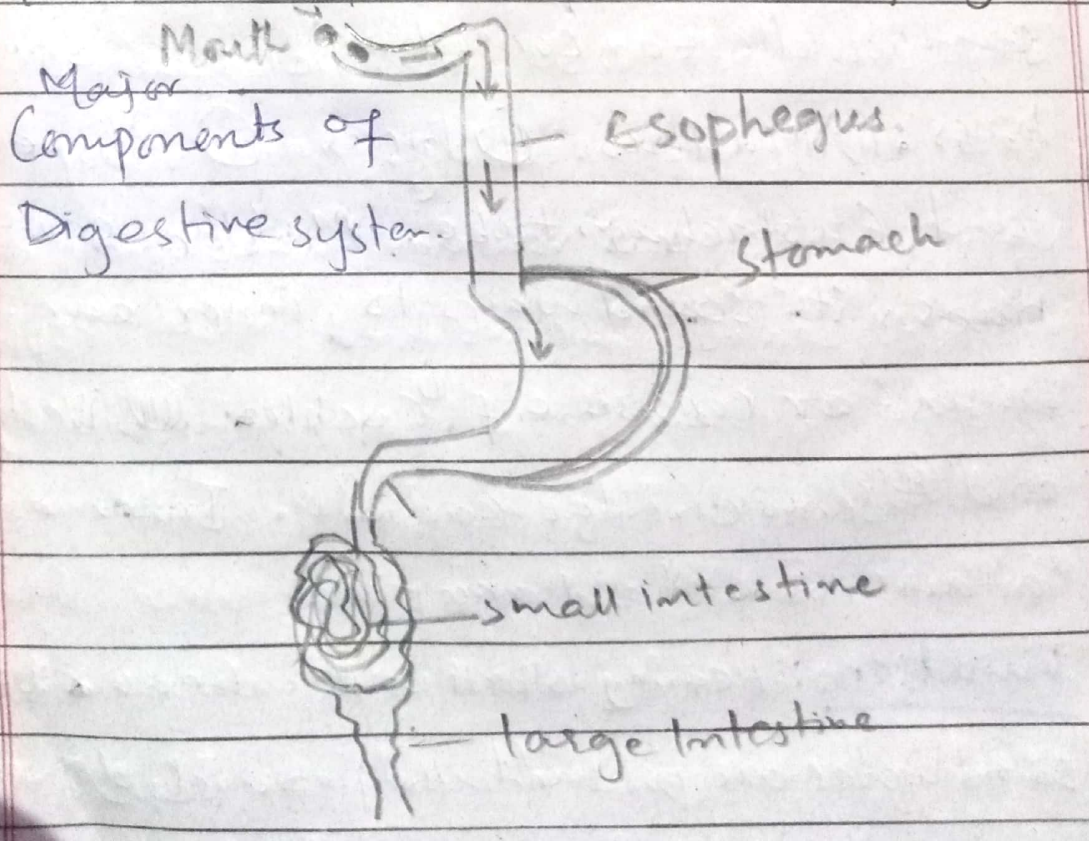
Function: Hearing starts with outear. When sound waves are produced they travel down to external auditory canal and strike ear drum causing vibration.

vibration is passed to ossicles that amplify the sound and send that sound to Cochlea. These the sound waves are converted into electrical impulses and auditory nerve sends these impulses to brain and brain translates electrical impulse as sound.

b) Digestive System and role of Small Intestine

What:

Digestive system is the system responsible for breakdown of larger food particles (carbohydrates, proteins, lipids) into smaller, simpler and absorbable food particles (Glucose, amino acids, fatty acids).



Role of Small Intestine:

Small intestine is one of the most important parts of digestive system. It is six centimeter long and divided into three parts:

(i) Duodenum
(ii) Jejunum
(iii) Ileum

a) Duodenum releases Enteriokinase and also causes secretion from pancreas and liver. Starch is converted into maltose under the action of Amylase.
Pancreatic juices contains Sodium bicarbonate, amylase, Lipase and Trypisinogen.

Tyrprisongen + Enteriokinase → Trypsin
Typrsin converts polypeptides into Aminoacids.

b) **Jejunum** releases intestinal juice that contains aminopeptidase, Enypsin, Lipase, Maltase and Lactase. that are responsible for digestion of protein, lipids and Carbohydrate

c) **Ileum**: In this part absorption of nutrients into blood takes place. Capillaries villi
villi, finger like projections
Covered with Capillaries absorb the nutrients into blood.

C. Vitamins:

Vitamins are compounds which are essential for growth and nourishment. Vitamins enhance the body's use of carbohydrates, proteins and fats.

Two Types: (I) Fat Soluble II Water Soluble

- Fat Soluble vitamins as the name indicates are soluble in fats. These includes Vitamin A, D, E and K.

Vitamin A is essential for growth and vision.
Vitamin D is important for bone's firmness.
Vitamin E is essential for healthy skin, hair and controls aging upto some extent
Vitamin K essential for blood clothing, bone healing and nerve functioning.

- Water Soluble Vitamins Includes Vitamin C and Vitamin B Complex.

Vitamin C is responsible for healing and healthy nerve functioning
Vitamin B Complex (B_1, B_2, B_3, B_5, B_6, B_9, B_{12}) essential for growth, skin, nerve functioning, maintance of RBCs, important for reproduction and immune system e.t.c.

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d. Function of pituitary gland:

Pituitary gland is the master gland of the body located in hypothalamus of brain. It consists of three lobes; Anterior lobe, median lobe and posterior lobe.

-Anterior lobe secretes Somatotrophin Hormone, Thyroid Stimulating Hormone, Adrenocorticotrophic hormone and gonadotrophic hormones which are responsible for growth, stimulating thyroid gland, stimulating adrenal glands and stimulating follicle stimulating hormone, Luteinising hormone and prolactin hormones respectively.

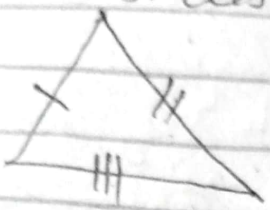
Median lobe secretes only Melanophore Stimulating hormone that stimulates melanocytes in skin to produce brown pigment called melanin.

Posterior lobe does not secretes its own hormone. It only act as store house for hormones secreted by hypothalamus, Antidiuretic hormone and oxytocin which are responsible for water absorption, contraction and expansion of uterus during child birth along with milk formation respectively.

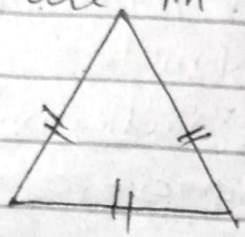
→ → → →

Q7: c. Define and Draw The following Triangles:
① Scalene Triangle ② Equilateral Triangle
Right angled Isoceles Triangle

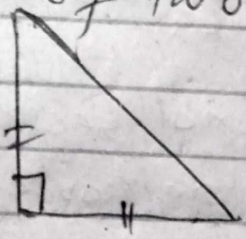
Scalene Triangle: a triangle in which all three sides are in different length



Equilateral Triangle in which all the three side are in equal length.



Right Angeled Isoceles a right triangle that consists of two equal length.



D: Probability

$$\therefore \text{Prob}(\in) = \frac{\text{no. of ways of favorable event (occurrence of event)}}{\text{Total possible outcomes.}}$$

$$\therefore \text{Prob}(8) = \frac{3}{8}$$

$$\text{Prob}(8) = 3|8.$$

Q.7 (b) BROTHER then SISTER = ?

Moving one step back: Q D G S N Q A → Q D S R H R

In the given code, when we move in reverse direction with consectively taking one step backwasd then "BROTHER" becomes "Q D G S N Q A" Similarly when we move in reverse direction taking 1 step backward consecutively "SISTER" can be codified as "QDSRHR".

Q7 (a): Find Original price?

Data: Increase %age = 20%
Current price after increase Rs 80
Original price = ?

Solution: Original price + 20% = 80

Let take Original price = x Then:

$x + 20\% = 80$

$x = 80 - 20\%$

$x = 80 - \frac{20}{100}$

$x = \frac{800 - 20}{100}$

$100x = 800 - 20$

$100x = 7780$

$x = \frac{780}{2} = 78$

Original price = Rs 78.